

REMARKS

In the last Office Action, claims 7 and 12 were rejected under 35 U.S.C. §103(a) as being unpatentable over U.S. Patent No. 6,741,284 to Shono in view of U.S. Patent No. 6,643,460 to Uchiyama et al. ("Uchiyama"). Claims 7-12 were rejected on the ground of non-statutory obviousness-type double patenting as being unpatentable over claims 1-3 and 6 of U.S. Patent No. 6,822,802 ("the '802 patent") in view of Uchiyama. The Examiner acknowledged receipt of the claim for foreign priority under 35 U.S.C. §119 and receipt of the priority document, thereby perfecting the foreign priority claim. The Examiner also indicated approval of the drawings filed with the application.

In accordance with this response, claims 7-8 have been amended to more particularly point out the novel features of the invention. In addition, new claims 13-15 have been added. The specification has been revised in editorial respects and to better conform to U.S. practice and to provide a direct antecedent basis for the claim language. A new, corrected abstract has been added to correct the informality noted by the Examiner.

The present invention is directed to a terrestrial telescope with a digital camera. As shown, for example, in the embodiment shown in Fig. 1 as modified by Fig. 5, the

terrestrial telescope with a digital camera comprises a group of objective lenses 1, an imaging optical system having an optical path and including the group of objective lenses 1 and an imaging element 3 disposed along the optical path at a position at which an image of a subject is formed by the group of objective lenses, an optical-path-splitting means insertable into and retractable from the optical path, and an observation optical system 4-7 for observing an optical image of the subject via the optical-path-splitting means. As shown in Fig. 5, the optical-path-splitting means comprises a wedge-shaped half-mirror 18 having a first flat surface that reflects the subject image toward the observation optical system and a second flat surface through which the subject image is transmitted to fall incident on the imaging element 3, the second flat surface being inclined relative to the first flat surface so as to correct an image-formation positional deviation in the direction crossing the imaging optical axis arising when the optical-path-splitting means 18 is inserted into the optical path of the imaging optical system.

An imaging position correction means including an optical element 9 is insertable into the optical path of the imaging optical system for correcting an image-formation positional deviation along the imaging optical axis arising

when the optical-path-splitting means 18 is retracted from the optical path during imaging. The optical element 9 and the optical-path-splitting means 18 are preferably integrally connected together so that the optical-path-splitting means 18 is retracted from the optical path when the optical element 9 is inserted into the optical path, and vice versa.

Claims 7-15 are directed to the Fig. 5 embodiment. Independent claim 7 is directed to a terrestrial telescope with a digital camera comprising a group of objective lenses, an imaging optical system, optical-path-splitting means insertable into the optical path of the imaging optical system to enable observing of the subject image and retractable from the optical path during imaging of the subject image, and an observation optical system for observing an optical image of the subject via the optical-path-splitting means. Claim 7 further requires that the optical-path-splitting means has a first flat surface that reflects the subject image toward the observation optical system and a second flat surface through which the subject image is transmitted to fall incident on an imaging element of the imaging optical system, the second surface being inclined relative to the first surface so as to correct an image-formation positional deviation in the direction crossing the imaging optical axis arising when the optical-path-splitting means is inserted into the optical path

of the imaging optical system. No similar terrestrial telescope is disclosed by the prior art.

The primary reference to Shono discloses, as noted by the Examiner, a single lens reflex digital still camera having each of the elements recited in claim 7 except for an optical-path-splitting means having first and second flat surfaces that are inclined relative to one another to correct for image-formation positional deviation that arises when the optical-path-splitting means is inserted into the optical path of the imaging optical system. In Shono, the deviation of the image-formation position is corrected by a controller 29 that calculates, and stores in a memory 29M, the amount of displacement of a movable lens group corresponding to the in-focus position when the QR half-mirror 11 is retracted from the optical path (column 4, lines 1-7). As described in the present specification on pages 2-3, the configuration disclosed by Shono is disadvantageous in that it requires a processor and a memory and requires calculating and storing the in-focus position, which increases the manufacturing cost. By contrast, the invention recited in claim 7 utilizes a novel optical-path-splitting means insertable into and retractable from the optical path in order to correct for image-formation positional deviation.

In the statement of rejection, the Examiner proposes modifying Shono in view of Uchiyama to use in Shono a half-mirror having a first surface for reflecting the image toward an observation optical system and a second curved surface for allowing the image to pass to an image pick-up device for the purpose of correcting the image position when the half-mirror is inserted into the light path. Applicants respectfully traverse this proposed modification of Shono.

In Shono, the half-mirror 11 is movable into and out of the optical path, and means are provided to correct for image-formation positional deviation caused by the half-mirror when the same is inserted into the optical path. Uchiyama, on the other hand, pertains to a focal point detection apparatus for a reflex camera which, in the embodiment of Figs. 1-5, has a main half-mirror 2 and a sub-mirror 3 which coact with a reflecting mirror 4 to direct a light flux from a subject to a pick-up device 5-7. In this embodiment, the reflex camera is not described as being a single-lens reflex camera (such as in the Fig. 11 embodiment) and insofar as disclosed, the main half-mirror 2 is stationary. The main half-mirror 2 has a flat light-receiving surface for receiving the incident light flux and a curved light-transmitting surface in the form of a convex lens 2a for condensing light formed at the rear surface of the main mirror 2. The convex lens 2a formed at the rear

of the main mirror 2 constitutes a correction optical system 16 for adjusting the directions in which reverse-projected images 1a and 1b are projected in correspondence to the image height. As stated in the reference, the entire correction optical system 16 constitutes a convex lens (column 5, lines 21-22).

Contrary to the statement of rejection, the modification of the Shono half-mirror 11 to include a convex lens 2a as disclosed by Uchiyama would not be possible unless Shono were further modified to include the curved sub-mirror 3 and the reflection mirror 4 which are necessary to attain focal point detection. This, in turn, would require re-designing of the controller 29 of Shono since it would no longer be necessary to calculate and store in a memory data representative of the displacement of the movable lens group corresponding to the in-focus position because the focal point detection apparatus of Uchiyama achieves correction by means of the convex lens 2a, the sub-mirror 3 and the reflection mirror 4. Thus one of ordinary skill in the art would not have found it obvious to make the modification proposed by the Examiner as such would eliminate any means for adjusting the movable lens group 10b of the group of objective lenses 10.

Moreover, even if such a modification were made, it would not correspond to the terrestrial telescope with a digital camera recited in amended claim 7. Claim 7 requires that the optical-path-splitting means has a pair of flat surfaces which are inclined relative to one another to correct for image-formation positional deviation. In Uchiyama, the rear surface of the half-mirror 2 is formed as a convex lens 2a (or a cylindrical lens (column 8, lines 32-38)), and the curved surfaces of a convex lens and a cylindrical lens are not flat surfaces as required by claim 7.

Thus independent claim 7 together with dependent claims 8-15 patentably distinguish over the combined teachings of Shono and Uchiyama.

Applicants also respectfully traverse the obviousness-type double patenting rejection of claims 7-12 based on claims 1-3 and 6 of the '802 patent in view of Uchiyama. As recognized by the Examiner, claims 1-3 and 6 of the '802 patent do not disclose an optical-path-splitting means having first and second flat surfaces that are inclined relative to one another to correct for image-formation positional deviation. Likewise, as discussed above, Uchiyama does not disclose optical-path-splitting means having first and second flat surfaces which are inclined relative to one another to correct for image-formation positional deviation.

Thus even if it would have been obvious to one of ordinary skill in the art to modify the optical-path-splitting means of claims 1-3 and 6 of the '802 patent to include a convex lens on the rear surface thereof, such would not correspond to the claimed invention. Therefore none of the claims in the present application conflict with any of the claims in the '802 patent, and the obviousness-type double patenting rejection should be withdrawn.

In view of the foregoing, the application is now believed to be in allowable form. Accordingly, favorable reconsideration and passage of the application to issue are respectfully requested.

Respectfully submitted,

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Date